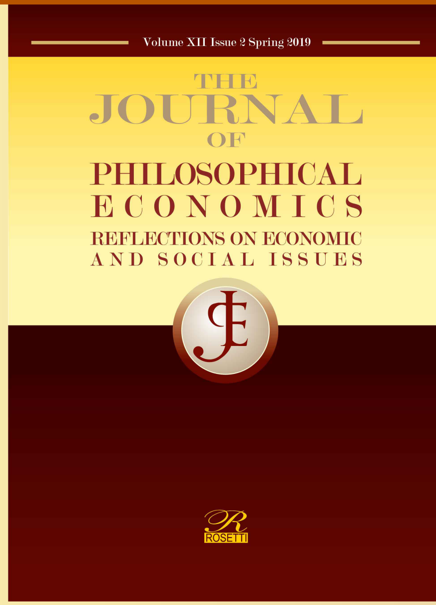
PHILOSOPHICAL ECONOMICS:
REFLECTIONS ON ECONOMIC
AND SOCIAL ISSUES

Volume XII Issue 2 Spring 2019

ISSN 1843-2298






# *Review of Venkat Venkatasubramanian,* How Much Inequality is Fair? Mathematical Principles of a Moral, Optimal, and Stable Capitalist Society, *New York, Columbia University Press, 2017, xxi+279 pp., hb, ISBN 978-0-231-18072-6*

**Valentin Cojanu**

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# Review of Venkat Venkatasubramanian, *How Much Inequality is Fair? Mathematical Principles of a Moral, Optimal, and Stable Capitalist Society*, New York, Columbia University Press, 2017, xxi+279 pp., hb, ISBN 978-0-231-18072-6

*Valentin Cojanu*

Reading a scholar's writing is at any rate a treat; the benefit of studying it always seems to exceed the cost of possibly confronting doubtful premises or linear thinking. Venkatasubramanian's quest for *fair inequality* fits that scenario. A professor of chemical engineering with Columbia University, he confidently threads interdisciplinary domains in the attempt to prove (formally) that capitalism may accommodate fairness and prosperity in the long term. The book content fulfils the promise of erudition of this ambitious project. The reader enjoys clear, at times witty, cogent prose within a wide range of scholarship, including moral philosophy, statistical mechanics, information theory, thermodynamics, game theory, systems engineering, and free-market economics. These incursions are meant to feed on each other to substantiate the book's 'mathematical theory' of 'the fairest inequality of income' in a capitalist society.

The organizing themes evolve around four 'foundational questions' (17-20; see Table 1 below), which in fact divide the book in three parts: before and after chapter 5, and chapter 5 itself.

**Received: 13 March 2019**

**Table 1** The conceptual framework of 'fair inequality'

| The socio-economic context: A free-market environment comprising utility-maximizing employees and profit-maximizing companies...'transaction costs are negligible, and no externalities are present.' (p. 44) | |
|---|---|
| *'Foundational' themes* | *Assessment criteria* |
| Ideal income distribution | 'The notion of fairness plays a central role in driving the emergence and spread of the salary (in general, utility) distribution through the free-market mechanism...The collective actions of all the employees, combined with the profit-maximizing survival actions of all the companies...lead toward a more fair allocation of pay.' (p. 48) |
| Fairness | 'One must not treat two equal entities unequally.' (The equality principle)<br>'You get more for doing more, and you get less for doing less.' (The proportionality principle)<br>'Decisions are not made arbitrarily, but are based on facts in evidence.' (The arbitrariness avoidance principle) (pp. 87-8) |
| Morality | 'Morality is about whether the free-market system is benefiting a majority of the people or only a small minority.' (p. 115) |
| Fairness is a critical property for the stability of a free market | Maximizing fairness 'is indeed maximizing the total utility of the entire population...The free market makes sense, under ideal conditions, not only from the perspective of economic *efficiency* but also *morally*. The ideal free market is intrinsically moral, as far as distributive justice is concerned.' (p. 119) |

Chapter Five is central to the book's argument for two reasons. For one thing, it is the lengthiest among the eight chapters, covering a third of the text body, and the place where the author advances most emphatically and explicitly his theory's 'mathematical principles'. For another, this is also the place where the author's research results of thirty-two years (1983-2015) are collected and introduced in connection with the 'philosophical theories of human societies' (xvii) to form a 'unified framework' – the 'statistical teleodynamics perspective'. The endeavour eventuates in developing a 'formal quantitative theory to show when inequality is fair' (17) and fairness (in income distribution) is maximized (23). 'Fairness... is after all, at the very core of a capitalist democracy' (16) the author assumes, which, even if most of us took it for granted, does not make the reciprocal hold true as well: capitalism, or any historical system for that matter, is not reasonably thought to lie at the core of the concept of fairness. It results, then, that in the author's view the way we interpret 'fairness' is necessarily inferred from the way we interpret capitalism in the first place. On these premises, the theoretical background straightjackets the author's alleged conceptual openness – an 'engineer's approach… without worrying too much about philosophical niceties and economic orthodoxy' (193) – into gradual dissolution from a comprehensive to a narrow view of social progress, from criticism of mainstream to reshaping it, and from the challenge of a new (multidisciplinary) paradigm to a (new) encroachment of economic (and social) thought by mathematical foundations.

Like any other attempt to see human society through the lens of an 'engineering problem', 'not restricted by society-specific details and nuances' (33), an ideal economic world can be *imagined* with a view, commendable though it may be, to setting yardsticks in the realm of policy-making. The author may assert confidently that, say, 'in the United States, the ideal income-share of the top 1% is 5.8%' (161) as the mathematical approach underlying the *imagined* analogies is inevitably self-consistent. The topic has become the staple of criticism in the heterodox economics tradition and it would be redundant to attempt here to double the arguments. What remains, though highly instructive, is to dissect once more the way philosophy, of a moral and political kind in our case, is bereft of power to inspire disciplinary breakthroughs to be turned instead into an object of mathematization – a disciplinary challenge of its own.

The conceptual framework, as summarized in Table 1, shapes the analogy between 'systems of inanimate entities, such molecules', whose theories were being developed 'about 150 years ago' (31), and the dynamic system of a free-market economy 'with millions of interacting agents exhibiting statistical behaviour' (xviii). The 'equilibrium income distribution' is a problem, which can be modelled as 'a population game with features of a congestion game' along with 'a unique Nash equilibrium' (61-2), which, as it happens, demonstrates the same phenomenon as in 'the statistical thermodynamic equilibrium reached by colliding gas molecules' (84). The analogy breaks with the admission that people, or a 'large collection of intelligent agents' (xvi), are driven by a 'purpose' or 'goal' – they exhibit *teleological* behaviour. Whereas organic life follows 'the design of the universe', it is the free-market, society's universe by virtue of analogy, which lays down its own, purpose-driven rules. Happiness derives from work 'in the form of economic rewards' (41), an apparently instantaneous computation in an apparently frictionless 'dynamics of switching jobs or employees' (31) as regards salary ('a proxy for utility' (48), but also the prospect of 'recognition and career advancement' from which a 'disutility for effort' is subtracted (50).

The crux of the argument comes in two related features of the 'teleodynamics' logic: stability and robustness of the 'equilibrium income distribution.' Entropy (or 'the game theoretic potential' (108)), 'an important property of distributions', is a measure of fairness, not randomness: 'maximizing entropy produces a self-organized coherent categorization of employees (which results in lognormal income distribution). The ideal free market for labour promotes fairness as an *emergent* self-organized property.' (106) The implication comes up in clear contours: impediments to free market functioning, hence to long-term resilience, such as rent-seeking, market power, or the influence of the working class (120), undermine 'the moral underpinning of the social contract.' (120)

Mathematical solutions are not the only instrument that lay the theoretical framework of teleodynamics at the foundation of social life's most valuable goal – happiness. Discrete moments of philosophical reflection represented by a group of three – J. S. Mill, Rawls, and Nozick, to whom Adam Smith, Dworkin, Scanlon or Sen are occasionally adjoined, who do not answer the four questions (30), are equally needed to ground the book's set of assumptions. How could it have been otherwise possible to defend the idea of a 'moral' capitalist society if not by recourse to

- Smith's 'invisible hand' to accept that 'the government has defined the rules of the game in such a way that the resulting free market behaves ideally.' (45)
- Nozick's libertarianism stance to make palatable the allure of *entropy* as the appropriate measure of fairness because of its characteristic to be independent of 'the presence of market authority' (107).
- Rawls's 'veil of ignorance' to sustain a utopic 'level playing field' (44-5) for all participants, a 'reference state' in which, for instance, all citizens 'are physically and emotionally healthy' and 'different levels of incomes do not result in different levels of happiness', or, equally relevant, 'all other requirements of social justice have already been satisfied.' (43-4)

With or without the 'niceties' of economics and philosophy, the author does not suspend critical examination of the overstated ambition of his intellectual project. One possible shortcoming may lie in the computational limits that preclude in-depth social analysis. In a one-class system, people weigh 'the utility from salary, disutility from employment, and utility from future prospects to the same extent, as will do in a two-class society – encompassing, say, 'an overwhelming majority of the population (say, 99%)...and a small minority (say 1%)...enjoying more happiness' (213). Anything beyond a four-class society would not make 'much sense' because 'it will be difficult to verify the model's predictions with empirical data.' (213) But one-class systems are problematic too. For example, amidst a host of instructive data regarding the CEO pay ratio, the author's answer to the question 'How much of the company's success is due to efforts of the CEO?' comes in the form of a trivial if honest admission, 'nobody really knows for certain.' (175)

On the other hand, the author proves himself an astute observer of social life and its persistent dilemmas in relation to economic inequality. When perusing the future directions of research, we come across many social matters – such as bargaining power (say, of the working class), the impact of savings and unearned income such as dividends, demand for skills, the emergence of the gig economy (230-1) – that were simply assumed away to make room for neat formalism. Had all of them been duly considered in discussing the problematic issue of fairness, we would have agreed perhaps that finding 'a pragmatic solution...to challenging trade-offs among liberty, fairness, and utility' (193) may not be a goal in itself, let alone one worth pursuing. The book's merit rests however elsewhere, namely on the persistent effort to instil modern philosophy in social analysis. It is not a singular effort – a thorough documentary research would surely have added a dozen kindred titles from recent literature – but one that stands out in originality, interdisciplinary focus, and crisp phrasing.

Valentin Cojanu is professor at the Bucharest University of Economic Studies and the founding and executive editor of *The Journal of Philosophical Economics* (cojanu@ase.ro).